

National Information Assurance Partnership



Common Criteria Evaluation and Validation Scheme Validation Report

**Market Central, Inc.
SecureSwitch® Dual Network Switch
Model #5000600**

Report Number: CCEVS-VR-01-0004

Dated: October 31, 2001

Version: 1.03

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ACKNOWLEDGEMENTS

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National Information Assurance Partnership

Common Criteria Certificate



Market Central, Incorporated

The IT product identified in this certificate has been evaluated at an accredited testing laboratory using the Common Methodology for IT Security Evaluation (Version 1.0) for conformance to the Common Criteria for IT Security Evaluation (Version 2.1). This certificate applies only to the specific version and release of the product in its evaluated configuration. The product's functional and assurance security specifications are contained in its security target. The evaluation has been conducted in accordance with the provisions of the NIAP Common Criteria Evaluation and Validation Scheme and the conclusions of the testing laboratory in the evaluation technical report are consistent with the evidence adduced. This certificate is not an endorsement of the IT product by any agency of the U.S. Government and no warranty of the IT product is either expressed or implied.

Product Name: SecureSwitch ® Dual Network Switch
Version and Release Numbers: Model #5000600
Evaluation Platform: N/A
Assurance Level: EAL4

Name of CCTL: COACT, Incorporated
Validation Report Number: CCEVS-VR-01-0004
Date Issued: 31 October 2001
Protection Profile Identifier: N/A

Original signed

Director
Information Technology Laboratory
National Institute of Standards and Technology

Original signed

Information Assurance
Director
National Security Agency

The following trademark is acknowledged:

SecureSwitch® is a registered trademark of Market Central, Inc.

Table of Contents

<u>Figures</u>	3
<u>Tables</u>	3
1. Executive Summary	4
2. Identification	5
3. Security Policy	7
4. Assumptions and Clarification of Scope	7
4.1 Usage Assumptions	7
4.2 Environmental Assumptions	8
4.3 Clarification of Scope.....	8
5. Architectural Information	8
6. Documentation	10
7. IT Product Testing	10
8. Evaluated Configuration	12
9. Results of Evaluation	12
10. Comments/Recommendations	13
11. Security Target	13
12. Acronyms	13
13. Bibliography	14
14. Certificate Details	15

Figures

Figure 1. SecureSwitch®, front view.	6
Figure 2. SecureSwitch®, rear view.	6
Figure 3. Left Ethernet PC board assembly.	9
Figure 4. Shielded tubes, each containing an Ethernet PC board assembly.	9
Figure 5. Shielded tubes, each containing an Ethernet PC board assembly, in position within the TOE.	10

Tables

Table 1. Evaluator test results for the SecureSwitch® Dual Network Switch, Model #5000600 TOE.	11
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1. Executive Summary

The purpose of this report is to document the results of the evaluation of SecureSwitch® Dual Network Switch, Model #5000600, a product of Market Central, Inc., of Pittsburgh, PA.¹ This report is not an endorsement of the product by any agency of the United States Government, and no warranty of the product is either expressed or implied.

Evaluation at EAL4² of SecureSwitch® Dual Network Switch, Model #5000600, a stand-alone, all-hardware product was performed by the COACT, Inc.³ CAFE Laboratory of Columbia, MD. The project, which also involved the evaluation of the applicable Security Target (ST), was completed on October 31, 2001.

The SecureSwitch® Dual Network Switch, Model #5000600 TOE is a mechanical switch assembly that controls the connections to two separate networks. The TOE provides the capability to connect to only one of the networks at any given time, and prevents crosstalk, or bleed-over, from one network to the other. The TOE consists of two separate mechanical switches, connected with a non-metallic bar that prevents both switches from being either open or closed at the same time. One switch must be open and one closed. The housing of the TOE is also non-metallic, to prevent conduction of any signal between the two separate networks. Additionally, internal to the TOE, each of the switch mechanisms is encased in a composite copper/iron shielding to prevent any electromagnetic coupling of the two networks. The non-metallic housing of the TOE is assembled with tamper-resistant screws to reduce the possibility of a user gaining physical access to the composite copper/iron shielding, switches, and/or internal wiring.

The SecureSwitch® Dual Network Switch, Model #5000600 does not claim conformance to any Protection Profile (PP).

The Security Target (ST) for the SecureSwitch® Dual Network Switch, Model #5000600, is contained within the COACT, Inc. document *Market Central SecureSwitch® Security Target, V1.3*, dated October 29, 2001 [STV1.3]. The ST is compliant with the *Specification of Security Targets* requirements found within Annex C of Part 1 of the CC [CCV2.1P1].

The SecureSwitch® Dual Network Switch, Model #5000600 TOE has been shown to be compliant with the TOE security functional requirements; the IT security functional requirements; and the security assurance requirements identified within the ST.

¹ Market Central, Inc., 500 Business Center Drive, Pittsburgh, PA 15205-1333. Telephone: (412) 494-2800.

² Not all acronyms are expanded within this Validation Report. The Acronyms section of this report contains several acronyms and expansions..

³ COACT, Inc., Rivers Ninety Five, 9140 Guilford Road, Suite L, Columbia, MD 21046. Telephone: (301) 498-0150.

- The TOE security functional requirements identified in the ST are: FDP_IFC.2 Complete information flow control; FDP_IFF.1 Simple security attributes; FPT_SEP.1 TSF domain separation; ESP_ISO.1 Electronic Isolation – Network Sides; ESP_ISO.2 Electronic Isolation – Open Switch; and ESP_SHL.1 Electronic Shielding. The later three TOE functional requirements are extensible requirements.
- The IT security functional requirements identified in the ST are: FMT_MSA.1 Management of security attributes and FMT_MSA.3 Static attribute initialisation.
- The security assurance requirements identified in the ST are those of EAL4.

The CCTL has presented work units and rationale that are consistent with the CC, the *Common Methodology for Information Technology Security Evaluation* (CEM) [CEM], and CCEVS Publication Number 4, *Guidance to CCEVS Approved Common Criteria Testing Laboratories* [CCEVS4]. The CCTL evaluation team concluded that:

- The requirements of *Class ASE: Security Target evaluation* have been met, and issued a Pass verdict for the Security Target (ST) [STV1.3].
- The TOE security functional requirements; the IT security functional requirements; and the EAL4 assurance requirements identified within the ST [STV1.3] for the SecureSwitch® Dual Network Switch, Model #5000600 TOE have been met, and issued a Pass verdict for the TOE.

The validation team followed the procedures outlined in the CCEVS Publication Number 3, *Guidance to Validators of IT Security Evaluations* [CCEVS3]. The validation team concluded that the evaluation verdicts of Pass for both the ST and the TOE.

2. Identification

Name and model number of evaluated product:

SecureSwitch® Dual Network Switch, Model #5000600

Developer:

**Market Central Inc.
500 Business Center Drive
Pittsburgh, PA 15205-1333
Voice: (412) 494-2800**

TOE Description:

The SecureSwitch® Dual Network Switch, Model #5000600 TOE is a mechanical switch assembly that controls the connections to two separate networks. The TOE provides the capability to connect to only one of the networks at any given time, and prevents crosstalk, or bleed-over, from one network to the other. The TOE consists of two separate mechanical switches, connected with a non-metallic bar that prevents both switches from being either open or closed at the same time. One switch must be open and one closed. The housing of the TOE is also non-metallic, to prevent conduction of any signal between the two separate networks. Additionally, internal to the TOE, each of the switch mechanisms is encased in a composite copper/iron shielding, to prevent any electromagnetic coupling of the two networks. The non-metallic housing of the TOE is assembled with tamper-resistant screws, to reduce the possibility of a user from gaining physical access to the composite copper/iron shielding, switches, and internal wiring.

Images of the SecureSwitch® Dual Network Switch, Model #5000600 TOE are shown in Figure 1 and Figure 2.



Figure 1. SecureSwitch®, front view.



Figure 2. SecureSwitch®, rear view.

3. Security Policy

The security policy for the SecureSwitch® Dual Network Switch, Model #5000600 TOE, a mechanical switch assembly that controls connections to two separate networks, is as follows:

1. The networks are identified as Network A and Network B. Both Network A and Network B interface with the TOE via RJ45 connectors located at the rear of the TOE (see Figure 2).
2. The TOE allows signals from either Network A or Network B to pass through it. The user of the TOE selects either Network A or Network B as the signal source via switches located at the front of the TOE (see Figure 1). These switches are joined by a bar in a manner that prevents both switches from being opened (i.e., no signal flow) or closed (i.e., signal flow) at the same time.
3. For the TOE, the following electronic isolation metric shall apply to ensure there is a minimum isolation between two sides of an open switch:
 - From 200 kHz to 300 kHz, the TOE shall show an attenuation greater than 78 dB.
 - From 300 kHz to 1.3 MHz, the TOE shall show an attenuation greater than 78 dB.
 - From 1.0 MHz to 11.0 MHz, the TOE shall show an attenuation greater than 79 dB.
 - From 10.0 MHz to 110.0 MHz, the TOE shall show an attenuation greater than 75 dB.

Note: Quality RF coaxial switches normally are rated > 60 dB.

4. Assumptions and Clarification of Scope

4.1 Usage Assumptions

The SecureSwitch® Dual Network Switch, Model #5000600 is an all-hardware stand-alone TOE. The following assumptions were made during the evaluation of the TOE.

- The TOE was assumed to be connected as follows:
 - to one computer and two separate networks using standard network connectors
 - or*

- to two separate computers and two separate networks using standard network connectors;
- Connections to and from the TOE were assumed to involve shielded cabling to minimize emanations from the connections;
- Users of the TOE were assumed to possess the necessary privileges to access the network connections managed by the TOE;
- Users of the TOE were assumed to be non-hostile;
- Users of the TOE were assumed to follow all guidance.

4.2 Environmental Assumptions

The following environmental assumption was made during the evaluation of the SecureSwitch® Dual Network Switch, Model #5000600 TOE.

- The TOE was assumed to be located within controlled access facilities to prevent unauthorized physical access.

4.3 Clarification of Scope

The SecureSwitch® Dual Network Switch, Model #5000600 was evaluated as a stand-alone TOE. In practice, however, it is realistic to assume that a purchaser of the TOE will use the product as a component of a system (e.g., consisting of a PC supporting an operating system and application software; a monitor; a keyboard; a mouse; network interface cards; shielded cables; and the TOE). Although the TOE has been evaluated at EAL4, it cannot be assumed that such a system provides EAL4 assurance.

5. Architectural Information

The all-hardware SecureSwitch® Dual Network Switch, Model #5000600 TOE is comprised of three layers, identified as follows:

- The two independent switch mechanisms (see Figure 1, Figure 4, and Figure 5);
- The electronic interface connectors (see Figure 3);
- The copper/iron shielded casing (see Figure 4 and Figure 5).

Figure 1 and Figure 2 show the front and rear view, respectively, of the TOE. As can be seen in Figure 1, each of the two switch interfaces has a knob attached. The two knobs are connected by a crossbar, enabling both of them to switch at the same time. The crossbar is the only connection between the two switching mechanisms.

Figure 3 contains an image of the left Ethernet PC board assembly (there are two per TOE, one left and one right).

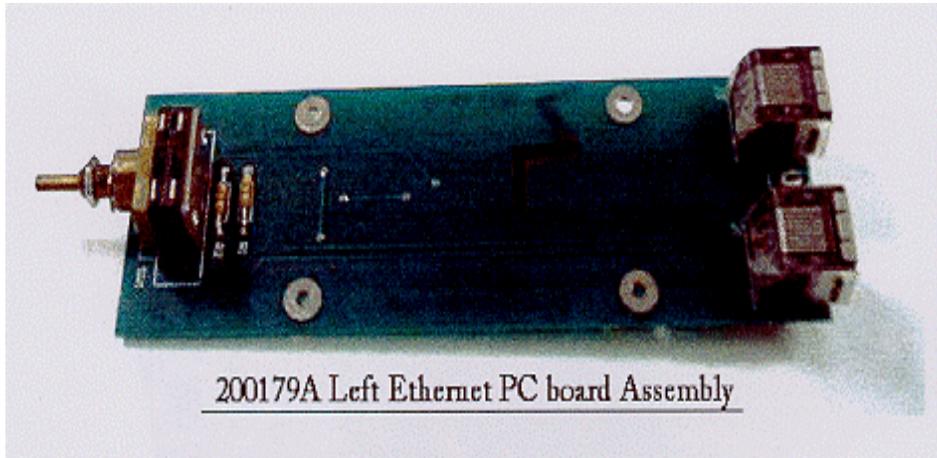


Figure 3. Left Ethernet PC board assembly.

Each Ethernet PC board assembly is placed into a proprietary copper/iron shielded casing as shown in Figure 4.

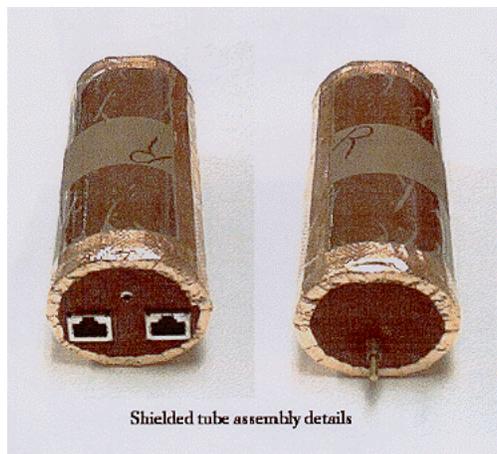


Figure 4. Shielded tubes, each containing an Ethernet PC board assembly.

Figure 5 shows the two shielded tubes, each containing an Ethernet PC board assembly, in position within the TOE prior to placement of the upper external protective casing.



Figure 5. Shielded tubes, each containing an Ethernet PC board assembly, in position within the TOE.

The fully-assembled SecureSwitch® Dual Network Switch, Model #5000600 TOE (Figure 1 and Figure 2) contains no electrical connections between the two independent switch mechanisms.

6. Documentation

The following document contains details relating to the installation and operation of the SecureSwitch® Dual Network Switch, Model #5000600 TOE.

Market Central, March 1998, Part Number 5000600, *SecureSwitch®, Ethernet/Ethernet Guide*.

The document cited above is non-proprietary and is distributed with each purchased SecureSwitch® Dual Network Switch, Model #5000600.

7. IT Product Testing

Market Central, Inc. provided tests and test results applicable to the SecureSwitch® Dual Network Switch, Model #5000600 TOE.

COACT, Inc. CAFE Laboratory evaluators tested the TOE. Some of the tests conducted directly exercised the TSF. These specific tests are shown in Table 1.

Test Identifier	Test Description	Expected Results	Actual Results
ET13	From 200 kHz to 300 kHz the TOE should show an attenuation greater than 80 dB.	The TOE will show an attenuation greater than 80 dB.	The TOE shows an attenuation greater than 78.25 dB at 250.0 kHz that is limited by machine noise from the spectrum analyzer.
ET14	From 300 kHz to 1.3 MHz, the TOE should show an attenuation greater than 80 dB.	The TOE will show an attenuation greater than 80 dB.	The TOE shows an attenuation greater than 78.69 dB at 800.0 kHz that is limited by machine noise from the spectrum analyzer.
ET15	From 1.0 MHz to 11.0 MHz, the TOE should show an attenuation of 80 dB up to 7 MHz, and then decrease to 75 dB at 11 MHz.	The TOE will show an attenuation of 80 dB up to 7 MHz that then decreases to 75 dB at 11 MHz.	The TOE shows an attenuation greater than 79.46 dB at 10.0 MHz that is limited by machine noise from the spectrum analyzer. This attenuation remains level with the machine noise, up to 11.0 MHz.
ET16	From 10.0 MHz to 110.0 MHz, the TOE should show an attenuation of 60 dB up to 30 MHz.	The TOE will show an attenuation of 60 dB up to 30 MHz.	The TOE shows an attenuation greater than 75.0 dB at 100.0 MHz that is limited by machine noise from the spectrum analyzer.

Table 1. Evaluator test results for the SecureSwitch® Dual Network Switch, Model #5000600 TOE.

The evaluators also designed and executed other tests to demonstrate that the SecureSwitch® Dual Network Switch, Model #5000600 TOE operates as specified.

8. Evaluated Configuration

The SecureSwitch® Dual Network Switch, Model #5000600 TOE is delivered in the evaluated configuration. The all-hardware TOE does not use software, is a passive device, and does not provide data execution or storage capabilities.

9. Results of Evaluation

The Security Target (ST) for the SecureSwitch® Dual Network Switch, Model #5000600, is contained within the COACT, Inc. document *Market Central SecureSwitch® Security Target, V1.3*, dated October 29, 2001 [STV1.3]. The ST is compliant with the *Specification of Security Targets* requirements found within Annex C of Part 1 of the CC [CCV2.1P1].

The SecureSwitch® Dual Network Switch, Model #5000600 TOE has been shown to be compliant with the TOE security functional requirements; the IT security functional requirements; and the security assurance requirements identified within the ST.

- The TOE security functional requirements identified in the ST are: FDP_IFC.2 Complete information flow control; FDP_IFF.1 Simple security attributes; FPT_SEP.1 TSF domain separation; ESP_ISO.1 Electronic Isolation – Network Sides; ESP_ISO.2 Electronic Isolation – Open Switch; and ESP_SHL.1 Electronic Shielding. The later three TOE functional requirements are extensible requirements.
- The IT security functional requirements identified in the ST are: FMT_MSA.1 Management of security attributes and FMT_MSA.3 Static attribute initialisation.
- The security assurance requirements identified in the ST are those of EAL4.

The CCTL has presented work units and rationale that are consistent with the CC, the *Common Methodology for Information Technology Security Evaluation (CEM)* [CEM], and CCEVS Publication Number 4, *Guidance to CCEVS Approved Common Criteria Testing Laboratories* [CCEVS4]. The CCTL evaluation team concluded that:

- The requirements of *Class ASE: Security Target evaluation* have been met, and issued a Pass verdict for the Security Target (ST) [STV1.3].
- The TOE security functional requirements; the IT security functional requirements; and the EAL4 assurance requirements identified within the ST [STV1.3] for the SecureSwitch® Dual Network Switch, Model #5000600 TOE have been met, and issued a Pass verdict for the TOE.

10. Comments/Recommendations

10.1 Evaluator Comments

COACT, Inc. CAFE Laboratory evaluators included the following individuals.

- Arthur K. Arber
- Jennifer A. Arthur
- Eric J. Grimes
- Tiffani A. Parsons
- Peter C. Sargent

10.2 Validator Comments

The following Validator comments are provided:

- The SecureSwitch® Dual Network Switch, Model #5000600 is an all-hardware TOE that was evaluated as a stand-alone product;
- Testing of the SecureSwitch® Dual Network Switch, Model #5000600 TOE was well thought out, thorough, and very professionally done.

11. Security Target

The following document, incorporated here by reference, is the Security Target (ST) for the Market Central, Inc., SecureSwitch® Dual Network Switch, Model #5000600:

- *Market Central SecureSwitch® Security Target, V1.3*, dated October 29, 2001, COACT Inc. document number F4-1001-002 [STV1.3].

12. Acronyms

Acronym	Expansion
CC	<i>Common Criteria for Information Technology Security Evaluation</i> . [Note: Within this Validation Report, CC always means Version 2.1, dated August 1999.]
CCEVS	Common Criteria Evaluation and Validation Scheme
CCTL	Common Criteria Testing Laboratory
EAL	Evaluation Assurance Level
MHz	Megahertz
NIAP	National Information Assurance Partnership
NIST	National Institute of Standards and Technology
NSA	National Security Agency
NVLAP	National Voluntary Laboratory Accreditation Program
PC	Personal Computer
PP	Protection Profile
RF	Radio Frequency
ST	Security Target
TOE	Target of Evaluation
TSF	TOE Security Functions
dB	decibel
kHz	Kilohertz

13. Bibliography

[URLs](#)

- Common Criteria Evaluation and Validation Scheme (CCEVS): (<http://niap.nist.gov/cc-scheme>).
- COACT, Inc. CAFE Laboratory: (<http://www.coact.com/cafe.html>).
- Market Central, Inc.: (<http://www.mctech.com>).

[CCEVS Documents](#)

- [CCV2.1P1] *Common Criteria for Information Technology Security Evaluation, Version 2.1*, Part 1: Introduction and general model, August 1999, CCIMB-99-031.
- [CCV2.1P2] *Common Criteria for Information Technology Security Evaluation, Version 2.1*, Part 2: Security functional requirements, August 1999, CCIMB-99-032.

- [CCV2.1P3] *Common Criteria for Information Technology Security Evaluation, Version 2.1, Part 3: Security Assurance Requirements, August 1999, CCIMB-99-033.*
- [CEMV.10P2] *Common Methodology for Information Technology Security Evaluation, Version 1.0, Part 2: Evaluation Methodology, August 1999, CEM-99/045.*

CCEVS Documents

- [CCEVS3] *NIAP Common Criteria Evaluation and Validation Scheme for IT Security: Guidance to Validators of IT Security Evaluations, Draft, Version 0.5, February 2001.*
- [CCEVS4] *NIAP Common Criteria Evaluation and Validation Scheme for IT Security: Guidance to Common Criteria Testing Laboratories (Draft) Version 1.0, 20 March 2001.*

Other Documents

- [STV1.3] *Market Central SecureSwitch® Security Target, V1.3, dated October 29, 2001, COACT Inc. document number F4-1001-002.*
- [Guide98] *Market Central, March 1998, Part Number 5000600, SecureSwitch®, Ethernet/Ethernet Guide.*

14. Certificate Details

<i>Product Name:</i>	SecureSwitch® Dual Network Switch
<i>Version and Release Numbers:</i>	Model #5000600
<i>Evaluation Platform:</i>	N/A
<i>Assurance Level:</i>	EAL4
<i>Name of CCTL:</i>	COACT, Incorporated
<i>Validation Report Number:</i>	CCEVS-VR-01-0004
<i>Date Issued:</i>	31 October 2001
<i>Protection Profile Identifier:</i>	N/A